

## ABSTRACT

This invention relates to a carbon media for storage of hydrogen characterised in that it comprises known and novel micro-domain materials and that it is produced by a one or two-step plasma process. In the one-step plasma process conventional carbon black or graphitic carbon black can be formed. In the two-step plasma process, a hydrocarbon feed material is sent through a plasma zone and becomes partly dehydrogenated in the first step to form polycyclic aromatic hydrocarbons (PAHs), and is then sent through second plasma zone to become completely dehydrogenated to form micro-domain graphitic materials in the second step. By micro-domain graphitic materials we mean fullerenes, carbon nanotubes, open conical carbon structures (also named micro-cones), flat graphitic sheets, or a mixture of two or all of these. The novel carbon material is open carbon micro-cones with total disclination degrees  $60^\circ$  and/or  $120^\circ$ , corresponding to cone angles of respectively  $112.9^\circ$  and/or  $83.6^\circ$ .

Fig. 2